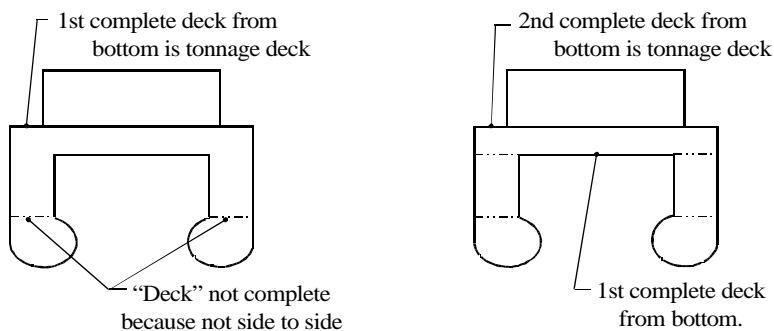


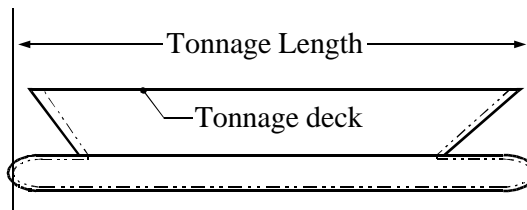
INSTRUCTIONS FOR USE BY MEASUREMENT ORGANIZATIONS IN CALCULATING REGULATORY UNDER-DECK TONNAGES OF MULTIHULL VESSELS

These instructions are to be used by organizations that measure vessels on behalf of the U.S. Coast Guard in applying the measurement rules of 46 CFR 69 Subparts C & D to multihull vessels. These instructions specifically apply to the under-deck measurement of such vessels. The information contained in these instructions will be included in the Tonnage Technical Policy, which is concurrently under development at the Marine Safety Center. Any deviation from these instructions must be approved by the Coast Guard Marine Safety Center (MSC-3/C3)..

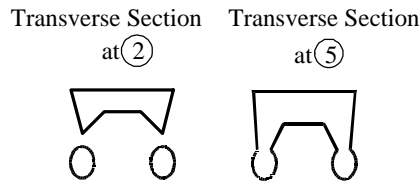
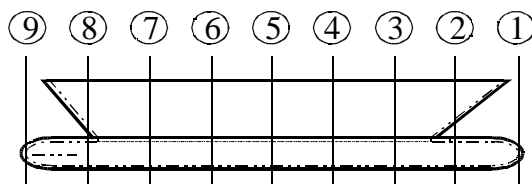
1. **Establishing Tonnage Deck** The tonnage deck is established using the same criteria as provided in 46 CFR 69.109(d). For the deck to be considered a complete deck, it must extend from stem to stern and side to side of the vessel. In this context, the watertight bottom skin (or "wet deck") between hulls may be considered as part of a "complete" deck, provided the deck "continues" from stem to stern and side to side of the vessel.



2. **Establishing Tonnage Length** The tonnage length is the distance between two planes that are perpendicular to the longitudinal axis of the vessel and tangent to the imaginary surface bounding the inboard faces of the ordinary frames at the extreme fore and aft locations of this surface.



3. **Establishing Transverse Sections** Once the tonnage length is established, the vessel is divided into transverse sections using the method of 46 CFR 69.109(g).

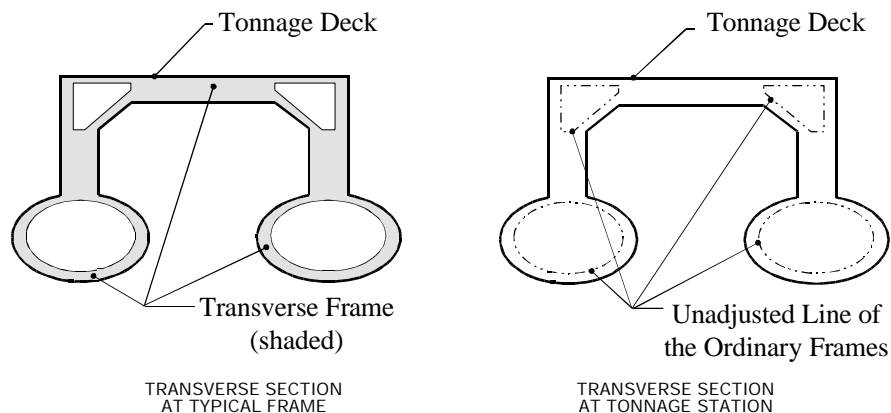


4. **Identifying Ordinary Frames** These frames are identified in the same manner as for monohulls. The same restrictions apply for establishing which framing qualifies as ordinary framing as apply to monohulls. For example:

- a. Frames must be spaced on centers that are a maximum of four (4) feet apart across an associated tonnage interval.
- b. If there are different sized frames, the largest sized frames that alternate with smaller frames and are spaced on centers that are a maximum of eight (8) feet apart across an associated tonnage interval are considered the ordinary frames.
- c. Frames must be continuous from the bottom of the vessel to the tonnage deck.

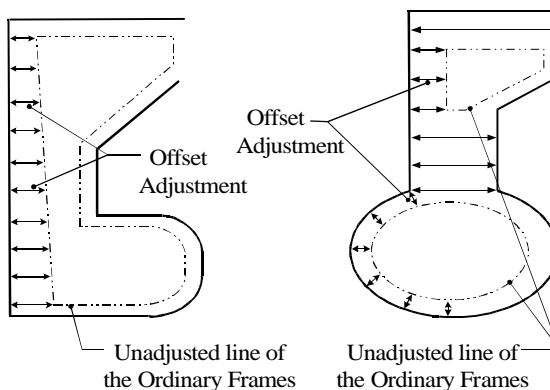
If no framing across an associated tonnage interval qualifies, the line of the ordinary frames is taken at the inner surface of the hull shell for the tonnage station of interest.

5. **Establishing Unadjusted Line of the Ordinary Frames** The unadjusted line of the ordinary frames is defined as the line of intersection of: 1) the imaginary surface that is tangent to the inboard faces of the ordinary frames; and 2) the imaginary plane running transversely through the vessel at the tonnage station of interest.

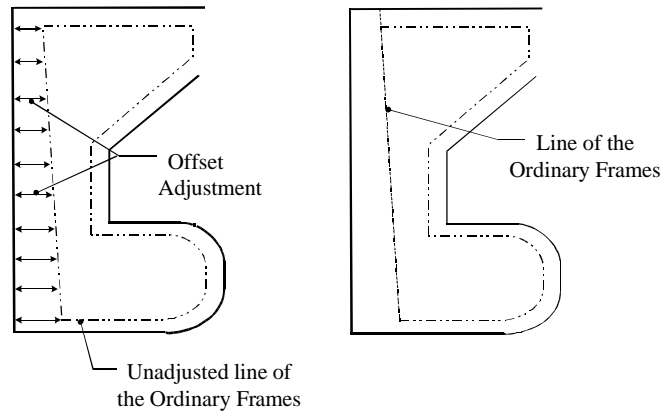


6. **Establishing Line of the Ordinary Frames** The following method is used to establish the line of the ordinary frames at each tonnage station, to which breadth measurements are taken. Note that this process is applied only to the outboardmost portions of the hull.

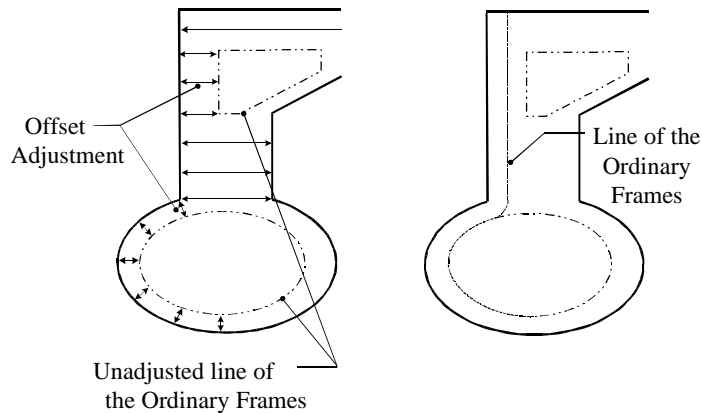
- a. Establish "offset adjustments" along the outboard sides of the hull(s). "Offset adjustments" are the series of measurements taken between the inner surface of the hull shell and the unadjusted line of the ordinary frames, in a direction perpendicular to the inner hull shell surface.



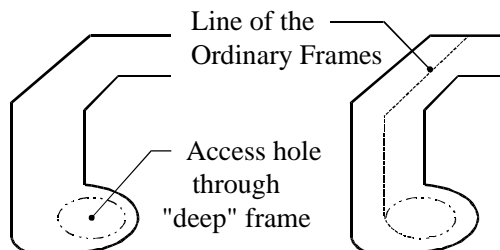
- b. If the "offset adjustments" remain the same or decrease in length going from the vessel bottom to the tonnage deck, then the line of the ordinary frames is taken at the inboard terminus of the offset adjustments.



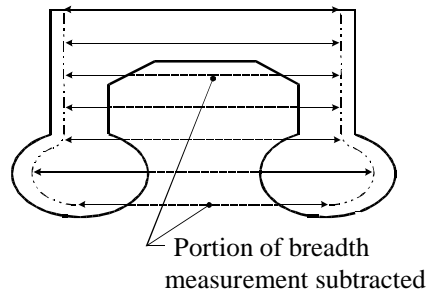
- c. If the "offset adjustments" increase in length at any point going from the vessel bottom to the tonnage deck, the line of the ordinary frames is taken at the inboard terminus of the "offset adjustments" until the point where the increase begins. At that point, the line of the ordinary frames must follow the inner surface of the hull shell at a distance not less than the length of the "offset adjustment" at the point where the increase began, until an "offset adjustment" of lesser length is encountered. At that point, the line of the ordinary frames returns to the inboard terminus of the "offset adjustments" until the next increase in "offset adjustment" length is encountered. The process repeats upward to the tonnage deck. The general rule is: the line of the ordinary frames from the vessel bottom to the tonnage deck always follows decreasing "offset adjustments."



- d. Discontinuities in frames (such as notches and larger lightening holes) are treated in a similar manner. Observe the restrictions on manway and lightening hole size that apply to monohull vessels of conventional design.



7. **Adjusting Breadth Measurements** The breadth measurements are adjusted to account only for the enclosed spaces by subtracting out the portion of the breadth measurement outside the hull boundary.



8. **Treatment of Wet Deck Area** Breadth measurements may be adjusted using the method of paragraph 7 above to account for that portion of the "cross-deck" or "wet deck" that is open to the sea. If this "wet deck" area is in any way enclosed, it must fully meet the requirements for exclusion as space open to the sea under the convention measurement system in order for the breadth measurements to be adjusted in this manner. Refer to the requirements of Regulations 2 and 6 of the International Convention on Tonnage Measurement of Ships, 1969, for specific requirements (e.g. space cannot be fitted with shelves or other means of securing cargo).

